

SEQUENCE LISTING

<110> University of Rochester

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Liu, Yingmei

<120> THIOREDOXIN MUTANTS AND USES THEREOF

<130> 21108.0021U1

<140> Unassigned

<141> 2003-07-22

<150> 60/401,073

<151> 2002-09-02

<160> 58

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 105

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/note =
synthetic construct

<400> 1

Met	Val	Lys	Gln	Ile	Glu	Ser	Lys	Thr	Ala	Phe	Gln	Glu	Ala	Leu	Asp
1				5					10					15	
Ala	Ala	Gly	Asp	Lys	Leu	Val	Val	Val	Asp	Phe	Ser	Ala	Thr	Trp	Cys
		20						25					30		
Gly	Pro	Cys	Lys	Met	Ile	Lys	Pro	Phe	Phe	His	Ser	Leu	Ser	Glu	Lys
		35				40						45			
Tyr	Ser	Asn	Val	Ile	Phe	Leu	Glu	Val	Asp	Val	Asp	Asp	Cys	Gln	Asp
	50					55					60				
Val	Ala	Ser	Glu	Cys	Glu	Val	Lys	Cys	Met	Pro	Thr	Phe	Gln	Phe	Phe
65					70				75					80	
Lys	Lys	Gly	Gln	Lys	Val	Gly	Glu	Phe	Ser	Gly	Ala	Asn	Lys	Glu	Lys
			85					90						95	
Leu	Glu	Ala	Thr	Ile	Asn	Glu	Leu	Val							
			100					105							

<210> 2

<211> 105

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/note =
synthetic construct

<400> 2

Met	Val	Lys	Gln	Ile	Glu	Ser	Lys	Thr	Ala	Phe	Gln	Glu	Ala	Leu	Asp
1				5					10					15	

Ala Ala Gly Asp Lys Leu Val Val Val Asp Phe Ser Ala Thr Trp Ser
20 25 30
Gly Pro Cys Lys Met Ile Lys Pro Phe Phe His Ser Leu Ser Glu Lys
35 40 45
Tyr Ser Asn Val Ile Phe Leu Glu Val Asp Val Asp Asp Cys Gln Asp
50 55 60

Val Ala Ser Glu Cys Glu Val Lys Cys Met Pro Thr Phe Gln Phe Phe
65 70 75 80
Lys Lys Gly Gln Lys Val Gly Glu Phe Ser Gly Ala Asn Lys Glu Lys
85 90 95
Leu Glu Ala Thr Ile Asn Glu Leu Val
100 105

<210> 3

<211> 105

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/note =
synthetic construct

<400> 3

Met Val Lys Gln Ile Glu Ser Lys Thr Ala Phe Gln Glu Ala Leu Asp
1 5 10 15
Ala Ala Gly Asp Lys Leu Val Val Val Asp Phe Ser Ala Thr Trp Cys
20 25 30
Gly Pro Ser Lys Met Ile Lys Pro Phe Phe His Ser Leu Ser Glu Lys
35 40 45
Tyr Ser Asn Val Ile Phe Leu Glu Val Asp Val Asp Asp Cys Gln Asp
50 55 60
Val Ala Ser Glu Cys Glu Val Lys Cys Met Pro Thr Phe Gln Phe Phe
65 70 75 80
Lys Lys Gly Gln Lys Val Gly Glu Phe Ser Gly Ala Asn Lys Glu Lys
85 90 95
Leu Glu Ala Thr Ile Asn Glu Leu Val
100 105

<210> 4

<211> 318

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/note =
synthetic construct

<400> 4

atggtgaagc agatcgagag caagactgct tttcaggaag ccttggacgc tgcaggtgat 60
aaacttgtag tagttgactt ctcagccacg tgggtgtgggc cttgcaaaat gatcaagcct 120
ttctttcatt ccctctctga aaagtattcc aacgtgatat tccttgaagt agatgtggat 180
gactgtcagg atgttgcttc agagtgtgaa gtcaaatagca tgccaacatt ccagtttttt 240
aagaaggac aaaagggtggg tgaattttct ggagccaata aggaaaagct tgaagccacc 300
attaatgaat tagtctaa 318

<210> 5

<211> 318

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/note =
synthetic construct

<400> 5

atggtgaagc	agatcgagag	caagactgct	tttcaggaag	ccttggacgc	tgcaggtgat	60
aaacttgtag	tagttgactt	ctcagccacg	tggcgtgggc	cttgcaaaat	gatcaagcct	120
ttctttcatt	ccctctctga	aaagtattcc	aacgtgatat	tccttgaagt	agatgtggat	180
gactgtcagg	atgttgcttc	agagtgtgaa	gtcaaataca	tgccaacatt	ccagtttttt	240
aagaagggac	aaaaggtggg	tgaattttct	ggagccaata	aggaaaagct	tgaagccacc	300
attaatgaat	tagtctaa					318

<210> 6

<211> 318

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/note =
synthetic construct

<400> 6

atggtgaagc	agatcgagag	caagactgct	tttcaggaag	ccttggacgc	tgcaggtgat	60
aaacttgtag	tagttgactt	ctcagccacg	tgggtgtgggc	ctcgcaaaat	gatcaagcct	120
ttctttcatt	ccctctctga	aaagtattcc	aacgtgatat	tccttgaagt	agatgtggat	180
gactgtcagg	atgttgcttc	agagtgtgaa	gtcaaataca	tgccaacatt	ccagtttttt	240
aagaagggac	aaaaggtggg	tgaattttct	ggagccaata	aggaaaagct	tgaagccacc	300
attaatgaat	tagtctaa					318

<210> 7

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/note =
synthetic construct

<400> 7

aagcttatgg	tgaagcagat	cgag	24
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<210> 8

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/note =
synthetic construct

<400> 8

ctcgagttag	actaattcat	taat	24
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<210> 9

<211> 165

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/note =
synthetic construct

<400> 9

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Met Ala Gln Arg Leu Leu Leu Arg Arg Phe Leu Ala Ser Val Ile Ser
 1           5           10           15
Arg Lys Pro Ser Gln Gly Gln Trp Pro Pro Leu Thr Ser Arg Ala Leu
      20           25           30
Gln Thr Pro Gln Cys Ser Pro Gly Gly Leu Thr Val Thr Pro Asn Pro
      35           40           45
Ala Arg Thr Ile Tyr Thr Thr Arg Ile Ser Leu Thr Thr Phe Asn Ile
      50           55           60
Gln Asp Gly Pro Asp Phe Gln Asp Arg Val Val Asn Ser Glu Thr Pro
      65           70           75           80
Val Val Val Asp Phe His Ala Gln Trp Cys Gly Pro Cys Lys Ile Leu
      85           90           95
Gly Pro Arg Leu Glu Met Val Ala Lys Gln His Gly Lys Val Val Met
      100          105          110
Ala Lys Val Asp Ile Asp Asp His Thr Asp Leu Ala Ile Glu Tyr Glu
      115          120          125
Val Ser Ala Val Pro Thr Val Leu Ala Met Lys Asn Gly Asp Val Val
      130          135          140
Asp Lys Phe Val Gly Ile Lys Asp Glu Asp Gln Leu Glu Ala Phe Leu
      145          150          155          160
Lys Lys Leu Ile Gly
                        165

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<210> 10

<211> 165

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/note =
synthetic construct

<400> 10

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Met Ala Gln Arg Leu Leu Leu Arg Arg Phe Leu Ala Ser Val Ile Ser
 1           5           10           15
Arg Lys Pro Ser Gln Gly Gln Trp Pro Pro Leu Thr Ser Arg Ala Leu
      20           25           30
Gln Thr Pro Gln Cys Ser Pro Gly Gly Leu Thr Val Thr Pro Asn Pro
      35           40           45
Ala Arg Thr Ile Tyr Thr Thr Arg Ile Ser Leu Thr Thr Phe Asn Ile
      50           55           60
Gln Asp Gly Pro Asp Phe Gln Asp Arg Val Val Asn Ser Glu Thr Pro
      65           70           75           80
Val Val Val Asp Phe His Ala Gln Trp Ser Gly Pro Cys Lys Ile Leu
      85           90           95
Gly Pro Arg Leu Glu Met Val Ala Lys Gln His Gly Lys Val Val Met
      100          105          110
Ala Lys Val Asp Ile Asp Asp His Thr Asp Leu Ala Ile Glu Tyr Glu
      115          120          125
Val Ser Ala Val Pro Thr Val Leu Ala Met Lys Asn Gly Asp Val Val
      130          135          140
Asp Lys Phe Val Gly Ile Lys Asp Glu Asp Gln Leu Glu Ala Phe Leu
      145          150          155          160
Lys Lys Leu Ile Gly
                        165

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<210> 11
 <211> 165
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:/note =
 synthetic construct

<400> 11
 Met Ala Gln Arg Leu Leu Leu Arg Arg Phe Leu Ala Ser Val Ile Ser
 1 5 10 15
 Arg Lys Pro Ser Gln Gly Gln Trp Pro Pro Leu Thr Ser Arg Ala Leu
 20 25 30
 Gln Thr Pro Gln Cys Ser Pro Gly Gly Leu Thr Val Thr Pro Asn Pro
 35 40 45
 Ala Arg Thr Ile Tyr Thr Thr Arg Ile Ser Leu Thr Thr Phe Asn Ile
 50 55 60
 Gln Asp Gly Pro Asp Phe Gln Asp Arg Val Val Asn Ser Glu Thr Pro
 65 70 75 80
 Val Val Val Asp Phe His Ala Gln Trp Cys Gly Pro Ser Lys Ile Leu
 85 90 95
 Gly Pro Arg Leu Glu Met Val Ala Lys Gln His Gly Lys Val Val Met
 100 105 110
 Ala Lys Val Asp Ile Asp Asp His Thr Asp Leu Ala Ile Glu Tyr Glu
 115 120 125
 Val Ser Ala Val Pro Thr Val Leu Ala Met Lys Asn Gly Asp Val Val
 130 135 140
 Asp Lys Phe Val Gly Ile Lys Asp Glu Asp Gln Leu Glu Ala Phe Leu
 145 150 155 160
 Lys Lys Leu Ile Gly
 165

<210> 12
 <211> 502
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:/note =
 synthetic construct

<400> 12
 atggctcagc gacttcttct gaggaggttc ctggcctctg tcatctccag gaagccctct 60
 cagggtcagt ggccaccct cacttccaga gccctgcaga cccacaatg cagtccctggt 120
 ggcttgactg taacacccaa cccagcccg acaatataca ccacgaggat ctcccttgaca 180
 acctttaata tccaggatgg acctgacttt caagaccgag tgggtcaacag tgagacacca 240
 gtggttggtg atttccacgc acagtgggtg ggaccctgca agatcctggg gccgagggtta 300
 gagaagatgg tggccaagca gcacgggaag gtggtgatgg ccaaggtgga tattgatgac 360
 cacacagacc tcgccattga gtatgaggtg tcagcgggtg ccactgtgct ggccatgaag 420
 aatggggacg tgggtggacaa gtttgtgggc atcaaggatg aggatcagtt ggaggccttc 480
 ctgaagaagc tgattggctg ac 502

<210> 13
 <211> 502
 <212> DNA
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/note =
synthetic construct

<400> 13
atggctcagc gactttcttct gaggagggttc ctggcctctg tcattctccag gaagccctct 60
cagggtcagt ggccaccct cacttccaga gccctgcaga cccacaatg cagtcctggt 120
ggcctgactg taacacccaa cccagcccgg acaatataca ccacgaggat ctccttgaca 180
acctttaata tccaggatgg acctgacttt caagaccgag tggtaacag tgagacacca 240
gtggttggtg atttccacgc acagtggagt ggaccctgca agatcctggg gccgaggta 300
gagaagatgg tggccaagca gcacgggaag gtggtgatgg ccaaggtgga tattgatgac 360
cacacagacc tcgccattga gtatgaggtg tcagcgggtg ccactgtgct ggccatgaag 420
aatggggacg tgggtggacaa gtttgtgggc atcaaggatg aggatcagtt ggaggccttc 480
ctgaagaagc tgattggctg ac 502

<210> 14

<211> 502

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/note =
synthetic construct

<400> 14
atggctcagc gactttcttct gaggagggttc ctggcctctg tcattctccag gaagccctct 60
cagggtcagt ggccaccct cacttccaga gccctgcaga cccacaatg cagtcctggt 120
ggcctgactg taacacccaa cccagcccgg acaatataca ccacgaggat ctccttgaca 180
acctttaata tccaggatgg acctgacttt caagaccgag tggtaacag tgagacacca 240
gtggttggtg atttccacgc acagtgggtg ggaccagca agatcctggg gccgaggta 300
gagaagatgg tggccaagca gcacgggaag gtggtgatgg ccaaggtgga tattgatgac 360
cacacagacc tcgccattga gtatgaggtg tcagcgggtg ccactgtgct ggccatgaag 420
aatggggacg tgggtggacaa gtttgtgggc atcaaggatg aggatcagtt ggaggccttc 480
ctgaagaagc tgattggctg ac 502

<210> 15

<211> 4

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/note =
synthetic construct

<400> 15

Cys Gly Pro Cys

1

<210> 16

<211> 4

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/note =
synthetic construct

<221> VARIANT

<222> 1

<223> Xaa = any amino acid except cys

<400> 16

Xaa Gly Pro Cys

1

<210> 17

<211> 4

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/note =
synthetic construct

<221> VARIANT

<222> 4

<223> Xaa = any amino acid except cys

<400> 17

Cys Gly Pro Xaa

1

<210> 18

<211> 105

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/note =
synthetic construct

<400> 18

Met Val Lys Gln Ile Glu Ser Lys Thr Ala Phe Gln Glu Ala Leu Asp
1 5 10 15Ala Ala Gly Asp Lys Leu Val Val Val Asp Phe Ser Ala Thr Trp Ser
20 25 30Gly Pro Cys Lys Met Ile Lys Pro Phe Phe His Ser Leu Ser Glu Lys
35 40 45Tyr Ser Asn Val Ile Phe Leu Glu Val Asp Val Asp Asp Cys Gln Asp
50 55 60Val Ala Ser Glu Ser Glu Val Lys Cys Met Pro Thr Phe Gln Phe Phe
65 70 75 80Lys Lys Gly Gln Lys Val Gly Glu Phe Ser Gly Ala Asn Lys Glu Lys
85 90 95Leu Glu Ala Thr Ile Asn Glu Leu Val
100 105

<210> 19

<211> 105

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/note =
synthetic construct

<400> 19

Met Val Lys Gln Ile Glu Ser Lys Thr Ala Phe Gln Glu Ala Leu Asp
1 5 10 15Ala Ala Gly Asp Lys Leu Val Val Val Asp Phe Ser Ala Thr Trp Cys
20 25 30

Gly Pro Ser Lys Met Ile Lys Pro Phe Phe His Ser Leu Ser Glu Lys
 35 40 45
 Tyr Ser Asn Val Ile Phe Leu Glu Val Asp Val Asp Asp Cys Gln Asp
 50 55 60
 Val Ala Ser Glu Ser Glu Val Lys Cys Met Pro Thr Phe Gln Phe Phe
 65 70 75 80

 Lys Lys Gly Gln Lys Val Gly Glu Phe Ser Gly Ala Asn Lys Glu Lys
 85 90 95
 Leu Glu Ala Thr Ile Asn Glu Leu Val
 100 105

<210> 20
 <211> 40
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:/note =
 synthetic construct

<400> 20
 gaagcaggcc caggcagagc ggaaagctgg gaagaggcag

40

<210> 21
 <211> 5
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:/note =
 synthetic construct

<400> 21
 Thr Glu Arg Lys Ser
 1 5

<210> 22
 <211> 19
 <212> RNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:/note =
 synthetic construct

<221> misc_RNA
 <223> double stranded

<400> 22
 gccuuucuuu cauucccuc

19

<210> 23
 <211> 19
 <212> RNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:/note =
 synthetic construct

<221> misc_RNA
<223> double stranded

<400> 23
ugcaguccug guggccuga 19

<210> 24
<211> 19
<212> RNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:/note =
synthetic construct

<221> misc_RNA
<223> double stranded

<400> 24
cgaagcgagc caagggcaa 19

<210> 25
<211> 73
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:/note =
synthetic construct

<400> 25
ctctcgatct gcttcacat cttggctgga agcttgccgc taagatgggtg aagcagattg 60
agagtaattt ttt 73

<210> 26
<211> 73
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:/note =
synthetic construct

<400> 26
actaattcat taatgggtggc ttcaagctga agcttgagct tgaggctact attaataat 60
tggtctattt ttt 73

<210> 27
<211> 73
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:/note =
synthetic construct

<400> 27
cccacaccac gtggctgaga agtcaactga agcttgagtt ggcttctcag tcgogtggtg 60
tgggtctttt ttt 73

<210> 28
<211> 73
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:/note =
synthetic construct

<400> 28
tcttgctctc gatctgcttc accatcttga agcttgagga tggatgaagcg gatcgggagc 60
aggactgttt ttt 73

<210> 29
<211> 79
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:/note =
synthetic construct

<400> 29
gatcaaaaaa ttactctcaa tctgcttcac catcttagcc gcaagcttcc agccaagatg 60
gtgaagcaga tcgagagcg 79

<210> 30
<211> 79
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:/note =
synthetic construct

<400> 30
gatcaaaaaa tagaccaatt cattaatagt agcctcaagc tcaagcttca gcttgaagcc 60
accattaatg aattagtcg 79

<210> 31
<211> 79
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:/note =
synthetic construct

<400> 31
gatcaaaaaa agaccacac cagcgactg agaagccaac tcaagcttca gttgacttct 60
cagccacgtg gtgtgggcg 79

<210> 32
<211> 79
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:/note =

synthetic construct

<400> 32
gatcaaaaaa cagtcctgct cccgatccgc ttcacccatcc tcaagcttca agatgggtgaa 60
gcagatcgag agcaagacg 79

<210> 33
<211> 73
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:/note =
synthetic construct

<400> 33
caatgcgagc ggaggggatgc acagcctaga agcttggtggg ttgtgcatct ctccgttcgc 60
attgcagttt ttt 73

<210> 34
<211> 73
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:/note =
synthetic construct

<400> 34
cttccttcagg aaggcctcca actgatccga agcttgggat tagttggagg ccttccttgga 60
ggagctgttt ttt 73

<210> 35
<211> 73
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:/note =
synthetic construct

<400> 35
tgtatattgt ccgggctggg ttgggtgtga agcttgatac ccagcccagt ccggataata 60
tacaccattt ttt 73

<210> 36
<211> 79
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:/note =
synthetic construct

<400> 36
gatcaaaaaa ctgcaatgcg aacggagaga tgcacaaccc acaagcttct aggctgtgca 60
tccctccgct cgcattgcg 79

<210> 37
<211> 79

<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:/note =
synthetic construct

<400> 37
gatcaaaaaa cagctcctcc aagaaggcct ccaactaatc ccaagcttcg gatcagttgg 60
aggccttcct gaagaagcg 79

<210> 38
<211> 79
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:/note =
synthetic construct

<400> 38
gatcaaaaaa tgggtgtatat tatccggact gggctgggta tcaagcttca cacccaaccc 60
agcccggaca atatacacg 79

<210> 39
<211> 73
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:/note =
synthetic construct

<400> 39
cctccgtggc cgcacgctcg ccctctgcga agcttggttag ggggcgagcg tgcggtcacg 60
ggggcgcttt ttt 73

<210> 40
<211> 73
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:/note =
synthetic construct

<400> 40
atagccttcc acagtgtgca cagcatccga agcttggggg gctgtgtacg ctgtggaagg 60
ctattatttt ttt 73

<210> 41
<211> 73
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:/note =
synthetic construct

<400> 41

tcaaccctt catgaagctg ctgtcacaga agcttgtgtg gcagtagctt catgagggg 60
ttgatagttt ttt 73

<210> 42
<211> 74
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:/note =
synthetic construct

<400> 42
dgtggcagct ggtgctcctc gccctcgccg aagcttgggc gggggcgagg ggcaccggct 60
gtaccgctt tttt 74

<210> 43
<211> 73
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:/note =
synthetic construct

<400> 43
gcaaggatat actcctgaga tattctgcga agcttggtag gatgtctcag gagtatatc 60
ttgccggtt ttt 73

<210> 44
<211> 73
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:/note =
synthetic construct

<400> 44
ctcgggctg ctccgcgcc gccgggctga agcttgagcc tggtagggcg ggagcggccc 60
cgagctgtt ttt 73

<210> 45
<211> 73
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:/note =
synthetic construct

<400> 45
aaccaggatg gtaatggctg tctgtaccga agcttgggta taggcagccg ttaccgtcct 60
ggttcattt ttt 73

<210> 46
<211> 73
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/note =
synthetic construct

<400> 46

tcggctgccc ccgccaacag agctgcccga agcttggggc ggctctgttg gcggggggcgg 60
ctgatggttt ttt 73

<210> 47

<211> 73

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/note =
synthetic construct

<400> 47

aatgactctc atgtgggtcat tggctagggga agcttgctta gccgatgact acatggggagt 60
cattcaattt ttt 73

<210> 48

<211> 73

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/note =
synthetic construct

<400> 48

cgccgccgcc tcctctccgg cgccctctga agcttgaggg ggcgtcggag gggagggcggc 60
ggcgtggttt ttt 73

<210> 49

<211> 79

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/note =
synthetic construct

<400> 49

gatcaaaaaa gcgccccgt gaccgcacgc tcgcccccta ccaagcttcg cagagggcga 60
gcgtgcggcc acggaggcg 79

<210> 50

<211> 79

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:/note =
synthetic construct

<400> 50

gatcaaaaaa ataatagcct tccacagcgt acacagcacc ccaagcttcg gatgctgtgc 60
acactgtgga aggctatcg 79

<210> 51
<211> 79
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:/note =
synthetic construct

<400> 51
gatcaaaaaa ctatcaaccc cctcatgaag ctactgccac acaagcttct gtgacagcag 60
cttcatgaag gggttgacg 79

<210> 52
<211> 79
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:/note =
synthetic construct

<400> 52
gatcaaaaaa gcggtagcag ccggtgcccc tcgccccgc ccaagcttcg gcgagggcga 60
ggagcaccag ctgccaccg 79

<210> 53
<211> 79
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:/note =
synthetic construct

<400> 53
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<213> Artificial Sequence

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